

him. The Surveyor-General suggests that a ranger be employed by the Crown to sell, on behalf of the Crown, fuel and timber that has reached maturity. With regard to the trigonometrical survey of the country, the piles built extend over 4000 square miles, and the final results deduced from observations made over 2600 square miles have been recorded. It was intended to commence a geological survey during the past year, with the object chiefly of examining the districts in which gold, coal, lead, and other minerals have been found, but considerations of economy have led to the abandonment of this scheme for the present.

THE present state and the history of the flora of the province of St. Petersburg were lately the subjects of a very interesting communication by Dr. R. Regel at a meeting of the St. Petersburg Society of Naturalists (*Mémoires*, vol. xix.). The influence of man in the introduction of new species is most marked in so populous a province. Several species have been unconsciously imported by man from South-Eastern Europe, the Mediterranean coast, and Asia; and many garden plants, such as *Bellis perennis*, *Impatiens parviflora*, and *Aster præcox*, have become regular members of the wild-growing flora. Some of them have spread with astonishing rapidity. The recently imported *Erigeron canadense* has now penetrated as far as the Altai Mountains; the *Matricaria discoidea*, imported from America thirty years ago, is found all over the region; while the *Sambucus racemosa* grows even in the wildest marshes of Schlüsselburg. Plants imported by man are dispersed by birds, water, and wind over a wide space, and a great many species, such as *Elolea canadensis*, *Corydalis bracteata*, *Scilla cernua*, &c., have spread during the last ten years. Dr. Regel insists upon the necessity of such species being carefully mentioned, because a few years after their introduction the botanist may not be able to explain how they appeared in the region, and may suppose that they have been merely overlooked.

ANOTHER interesting feature of the St. Petersburg flora which has been pointed out by Dr. Regel, is the frequency of white colour in the case of such flowers as are coloured pink or blue in Central Europe. The prevalence of white in the north is thus confirmed. The *Polygala vulgaris*, *Lychnis viscaria*, *L. Flos-cuculi*, *Centaurea phrygia*, *Jasione montana*, *Campanula glomerata*, *C. Trachelium*, *C. latifolia*, *C. rotundifolia*, *C. patula*, *Calluna vulgaris*, *Arctostaphylos Uva-ursi*, *Thymus serpyllum*, *Brunella vulgaris*, *Gymnadenia conopsea*, *Orchis maculata*, *O. Traunsteineri*, and others were found with white flowers. In accordance with Dr. Masters's views, Dr. Regel sees in this fact a pathological phenomenon due to unfavourable climatic conditions. The colouring pigment does not disappear, but more intercellular spaces appear, and being filled with air, they permit the full reflection of light. In fact, several white flowers of *Campanula patula* became blue when dried, the pressure exerted upon them evidently having compressed and reduced the intercellular spaces.

THE following are the lecture arrangements at the Royal Institution after Easter, so far as they relate to science:—Prof. E. Ray Lankester, four lectures on some recent biological discoveries; Mr. Eadweard Muybridge, of Pennsylvania, two lectures on the science of animal locomotion in its relation to design in art (illustrated by the zoopraxiscope); Prof. Dewar, five experimental lectures on chemical affinity; Prof. W. Knight, of St. Andrews, three lectures on (1) the classification of the sciences, historical and critical; (2) idealism and experience, in philosophy and literature; (3) idealism and experience, in art and life (the Tyndall lectures). The Friday evening meetings will be resumed on May 3, when a discourse will be given by Sir Henry Roscoe, M.P., on aluminium; succeeding discourses will probably be given by Prof. Dewar, Prof. Silvanus P. Thompson, the Rev. S. J. Perry, Prof. D. Mendeleeff, Mr. A. Geikie, Mr. C. V. Boys, and other gentlemen.

THE Registrar of the University of London desires us to call attention to the fact that the June examination for matriculation is, in the present and future years, to be held a week earlier than heretofore.

IN the list of English and American Corresponding Members of the French Academy of Sciences, printed in NATURE, January 24 (p. 312), Prof. A. Agassiz was inadvertently omitted from the list of names under "Anatomy and Zoology."

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*) from Barbadoes, presented by the West Indian Natural History Exploration Committee; a Kinkajou (*Cercoptes caniniolulus*) from Demerara, presented by Mrs. Marian FitzSimons; a Grey Squirrel (*Sciurus griseus*) from North America, presented by Miss Vokes; a Shag (*Phalacrocorax gracilis*), British, presented by Mr. Henry Reynold's; a Black Tortoise (*Testudo carbonaria*) from Trinidad, a — Cayman (*Facare*, sp. inc.) from Demerara, presented by Colonel Fielden, F.Z.S.

OUR ASTRONOMICAL COLUMN.

MELBOURNE OBSERVATORY.—The twenty-third Annual Report of the Board of Visitors to this Observatory, together with the Annual Report of the Government Astronomer, have just reached us. The visitation took place on October 4, 1888, and the Astronomer's Report is for the year ending June 30, 1888. The principal points of interest in the Reports are those referring to the great reflector and to the new photographic telescope. The mirrors of the former instrument had become so dull that their repolishing was rendered imperative, and the work was to be done at the Observatory itself, the risk and cost of sending them to England being prohibitory. With a view to this important operation, a number of small mirrors have been repolished, in order that the necessary experience might be acquired before the great mirrors were taken in hand. The new telescope for the photographic survey was well advanced, and Mr. Ellery expected that Melbourne would be ready to enter on her share of the work as soon, if not sooner, than the other associated Observatories. The Government of Victoria, besides supplying the necessary funds to enable the Observatory to take part in the photographic survey, had granted £2300 for the erection of a dwelling-house for the Director within the Observatory grounds. The new transit-circle and the two equatorials had been in constant use, and were in good order; 2962 observations of right ascension, and 1434 of Polar distance, having been obtained with the former during the year. The photo-heliograph had been subjected to a slight alteration, the front lens of the secondary magnifier having been previously too close to the primary focus, so that much trouble was caused from the magnified images of any particles of dust which might lodge upon it. The sun-pictures had, in consequence of the time employed over this alteration, not been so numerous as usual, a record of the sun's surface being only obtained on 129 days. With the great telescope, eighty-one nebulae were observed or searched for.

Mr. Ellery reports that the meteorological department, especially with regard to the Inter-Colonial Weather Service, increases in importance and efficiency every year, and that he proposed to call a conference of the several Meteorological Directors of the Australian Colonies, with the view of assimilating their methods of reporting, and of still further improving meteorological work in Australia.

COMET 1889 b (BARNARD, MARCH 31).—Herr von Hepperger has computed the following elements and ephemeris for this object from observations of dates March 31, April 4 and 8:—

$$\begin{aligned} T &= 1889 \text{ July } 27^{\text{h}} 48^{\text{m}} 12^{\text{s}} \text{ Berlin M.T.} \\ \omega &= 257^{\circ} 27' 28'' \\ \Omega &= 308^{\circ} 29' 41'' \\ i &= 162^{\circ} 46' 20'' \end{aligned} \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{Mean Eq. 1889 o.}$$

$$\log q = 0.29519$$

Error of middle place (O - C).
 $\Delta \lambda \cos \beta = -11''$. $\Delta \beta = 0''$.

Ephemeris for Berlin Midnight.

1889.	R.A.	Decl.	Brightness.
	h. m. s.	° ' "	
April 18 ...	5 10 18 ...	15 30'6 N. ...	0'92
22 ...	5 8 57 ...	15 22'9 ...	0'91
26 ...	5 7 53 ...	15 15'2 ...	0'91
30 ...	5 7 4 ...	15 7'5 N. ...	0'90

The brightness at discovery is taken as unity.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1889 APRIL 21-27.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on April 21

Sun rises, 4h. 53m.; souths, 11h. 58n. 35'0s.; sets, 19h. 5n.: right asc. on meridian, 1h. 57'6n.; decl. 12° 1' N. Sidereal Time at Sunset, 9h. 5m.

Moon (at Last Quarter on April 22, 14h.) rises, 1h. om.; souths, 5h. 0n.; sets, 9h. 0n.: right asc. on meridian, 18h. 58'1m.; decl. 22° 38' S.

Planet.	Rises.		Souths.		Sets.		Right asc. and declination on meridian.	
	h. m.		h. m.		h. m.		h. m.	
Mercury..	4 50	..	11 43	..	18 36	..	1 42'5	.. 9 35' N.
Venus ...	4 37	..	12 48	..	20 59	..	2 47'7	.. 22 45' N.
Mars ...	5 25	..	12 59	..	20 33	..	2 57'7	.. 17 4' N.
Jupiter ...	0 42	..	4 38	..	8 34	..	18 35'9	.. 22 55' S.
Saturn ...	11 25	..	19 5	..	2 45*	..	9 5'2	.. 17 54' N.
Uranus ...	17 44	..	23 12	..	4 40*	..	13 12'8	.. 7 0' S.
Neptune..	6 12	..	13 57	..	21 42	..	3 56'3	.. 18 46' N.

* Indicates that the setting is that of the following morning.

April.	h.	
24 ...	23	Jupiter stationary.
25 ...	7	Mercury in superior conjunction with the Sun.

Variable Stars.

Star.	R.A.		Decl.			h. m.
	h.	m.				
U Cephei ...	0	52'5	81° 17' N.	Apr. 21,	2	53 m
R Canis Majoris ...	7	14'5	16° 11' S.	..	22,	20 46 m
δ Libræ ...	14	55'1	8° 5' S.	..	23,	0 23 m
U Coronæ ...	15	13'7	32° 3' N.	..	24,	21 37 m
S Herculis ...	16	46'8	15° 8' N.	..	24,	m
U Ophiuchi... ..	17	10'9	1° 20' N.	..	21,	20 19 m
and at intervals of 20 8						
U Aquilæ ...	19	23'4	7° 16' S.	Apr. 26,	23	0 M
R Vulpeculæ ...	20	59'5	23° 23' N.	..	26,	M
S Cephei ...	21	36'6	78° 7' N.	..	28,	M

M signifies maximum; m minimum.

Meteor-Showers.

	R.A.	Decl.	
Near ζ Ursæ Majoris ...	206	57° N.	Slow; bright.
„ β Libræ ...	228	5° S.	Swift.
„ β Serpentis ...	233	16° N.	Very swift.
„ π Herculis ...	256	37° N.	Swift.
	272	20° N.	Swift.

GEOGRAPHICAL NOTES.

To the current number of the Proceedings of the Royal Geographical Society, Mr. George Taylor contributes a valuable paper on Formosa and its aborigines. Mr. Taylor, while resident on the south coast of Formosa, had good opportunities of studying the natives, and the information which he has otherwise collected renders his paper the best summary of our knowledge of Formosa which we have at present. Mr. Taylor thus summarizes the geography of Formosa. On the western side, the land is composed of low level plains, extending from the sea-shore to some distance into the interior, the country appearing flat up to the more pronounced elevations which precede the steeper mountain slopes. The splendid watershed from the central mountains shows in the numerous rivulets which spread like a network over the plains, and renders them especially suitable for the cultivation of rice and sugar-cane. The western

sea-board partakes of the nature of the land, the coast being lined with mud and sand-sbanks intersected by channels, this formation extending some distance out to sea. Within, Formosa is comparatively hilly, but large areas are covered with tea plantations, which form the principal industry. The east coast is rugged, precipitous, and exposed to the full fury of the north-east monsoon, which blows hard throughout eight months of the year; therefore, except in the Pilam plain and a few small valleys, little attempt is made at cultivation. To the south, the land terminates in huge masses of coral limestone, and coral branches may be traced in peaks elevated 2000 feet above sea-level. The sea-shore is lined with a semi-vitrified conglomeration of clay, sand, and coral, which presents a serrated surface so sharp and ragged as to be impassable to all beasts; and the natives, when fishing, are obliged to protect their feet with sandals composed of many folds of boar-skin. Mr. Taylor's account of the aborigines is specially valuable. While the pure aborigines from the interior are of an essentially Malayan type, still there is extraordinary diversity of features, indicating a considerable mixture of types. Among the Paiwang, probably the earliest settlers, head-hunting prevails. The Tipuns, again, seem to be of northern origin. To the naturalist—whether geologist, botanist, or zoologist—the interior of Formosa offers an almost virgin paradise.

ACCOUNTS are to hand of M. W. Delcommune's recent exploration of the Lomami, one of the most important southern tributaries of the Congo. Both Cameron and Wissmann met with the Lomami far to the south, and the latter connected it with the Sankuru. M. Delcommune, however, navigated the river from its mouth in the Congo, about 100 miles below Stanley Falls, for a distance of 580 miles, to a point only three days' journey from Nyangwé in the Lualaba. The river is reported to traverse a magnificent country, to be free from all obstructions, and to all appearance it continues to be navigable for some distance beyond M. Delcommune's farthest point.

MESSRS. W. AND A. K. JOHNSON have sent us a copy of the third edition of their small map of Central Africa, in which Mr. Stanley's recent route is laid down in red. The next edition ought to have the Lomami delineated in accordance with M. Delcommune's recent exploration.

AFRICA fills a large place in the new number of *Petermann's Mittheilungen*. Dr. K. W. Schmidt has an article which deserves serious attention on the surface or soil conditions of German East Africa. Dr. Schmidt writes from careful personal observation, and his estimate of the capabilities of the German sphere is not very encouraging. Freiherr von Steinäcker contributes some useful notes on German South-West Africa, with a map of Herero Land and neighbouring regions. Dr. R. Lüddecke describes at some length the features of the new map of Africa, in six sheets, which has been prepared for the new edition of Stieler's "Hand-Atlas."

In an interesting account in *Les Missions Catholiques* of a missionary's journey through Ecuador, it is stated that of the many towns and village, as Archidona, Canelos, &c., the names of which appear on maps of the country, scarcely one exists. The natives do not live in villages, and even where there is a church, they live miles away in the forest in small solitary communities. Hitherto the missionaries have failed in inducing the natives to take to communal or social life.

M. ROGOZINSKI, who has been in Europe for some time, has returned to Fernando Po, and intends to resume his explorations in the Cameroons region, and especially to endeavour to ascertain the existence or non-existence of the Lake Liba, which still figures mysteriously in maps of Africa.

THE death is announced of M. V. A. Malte-Brun, son of the great geographer of that name, and who himself for the last forty years had been a student of and writer on geography.

AFFORESTATION IN CHINA.

THE question of afforestation in China is at the present time attracting a great deal of attention. China is a treeless country, and to this, perhaps, are due the devastating floods which work such ruin there, and the fearful seasons of drought, which are almost as destructive as the floods. The timber used